The Detrimental Effects of Inadequate Sleep on the Economy

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Abstract

Sleep is vital for human beings and when this essential component is overlooked, the consequences are severe. These consequences do not simply target the person suffering from inadequate sleep, but rather have a spiral effect within the workplace. Inadequate sleep drastically increases work absenteeism, leading to major work productivity losses. The consequences of inadequate sleep transcend the detrimental physiological effects on the person and ultimately lead to a severe financial burden on the economy. Research has shown a correlation between various malaises and inadequate sleep. From cardiovascular disease, hypertension, and myocardial infarctions to uncontrolled diabetes and stroke, it is no wonder why the studies about adequate sleep are coming to the forefront. Sleep is a modifiable risk factor for each of these malaises and its importance should never be undermined. These malaises in addition to an overworked and exhausted person are leading to major increases in work absenteeism as well as decreased work productivity. These financial losses are stacking up and fast, leading to a major economic burden. The issue of inadequate sleep has gone unnoticed for far too long and its consequences are reaching a breaking point. Its increasing prevalence in the current society is only worsening the consequences within both the human body and the workplace. The time is now to stop this trend and start getting more sleep, in order to halt these taxing consequences on the physiology of human beings and the finances of the economy.
Introduction & Background

Inadequate sleep is the “silent killer” of the economy. Workers are reporting less sleep and for that reason, the economy is suffering. Overworked and exhausted, workers are trading in hours at the office for more hours in their beds. The consequences of inadequate sleep are reaching the surface in the lives of many people, causing them to miss work due to exhaustion or illness associated with insufficient sleep. This trend has been ongoing, and its effects are leading to major work productivity losses. Who knew that the more time people spend working instead of sleeping, the worse our economy is? Due to the increasing prevalence of inadequate sleep within society, more people are beginning to call out of work sick, leading to a major reduction in the workplace and an overall loss in work productivity. Humans know that they need to sleep, but what they do not understand is why they need to sleep. Historically, science has failed to explain the reasons why humans need sleep, and that in part explains society’s apathy toward it (Walker, 2018). As a result, the importance of sleep was diminished and humans turned a blind eye to the consequences of inadequate sleep, but not anymore.

Sleep is an essential component in the daily lives of humans, but for some reason, humans are sleeping less and less over time. It has been said that, “Sleep, especially REM sleep and the act of dreaming, is a tenable, yet underappreciated factor underlying many elements that form our unique human ingenuity and accomplishments” (Walker, 2018, p. 76). These accomplishments would not be possible without the benefits that humans receive each night from adequate sleep. It is unfortunate that the prevalence of sleep loss only continues to worsen as individuals age and recent studies have shown that at least 18 percent of adults reported receiving insufficient sleep (Altevogt & Colten, 2006). The importance of sleep goes beyond anything we have ever imagined and there is not a single organ within the human body that is not
impacted and enhanced by the nourishing effects of sleep. Sleep allows the brain to learn, memorize, and make logical decisions and choices; rebuilds the defenses of the immune system; promotes the body’s metabolic state by balancing insulin and circulating glucose; regulates the appetite allowing for weight control; restores the microbiome within the human gut; and lowers blood pressure ultimately fine-tuning the cardiovascular system (Walker, 2018).

Sleep is vital to every human being and allows for normal daily functioning and bodily processes. Without being able to function at baseline, many of the achievements human beings have made could have never been made possible. Sufficient sleep allows individuals to make more intelligent decisions and actions, regulate their emotions and foster creativity (Walker, 2018). Sufficient sleep contributes to optimal functioning and can inadvertently be regarded for many of the accomplishments made by human beings. The severity of insufficient sleep is extreme and is not something that should go unnoticed. The Centers for Disease Control and Prevention (CDC) reports that insufficient sleep is associated with an increase in the risk of various malaises, such as heart attack, coronary heart disease, stroke, asthma, chronic obstructive pulmonary disease (COPD), diabetes, and depression, just to name a few (Mohit, 2018).

Although passive in nature, sleep plays an active role in the lives of every single human being. Receiving adequate sleep each night is essential and evidence shows that sleep deprivation has massive effects on both physiological and mental health and may result in the incidence of chronic diseases (Yazdanpanah et al., 2020). This severe lack of sleep that humans are suffering can be one of the causes to blame for the prevalence of malaises in the current society.

The issue of insufficient sleep is fast-growing and becoming increasingly more prevalent in today’s society. More than one-third of American adults are not receiving enough sleep on a regular basis and this issue has been declared a “public health problem” by the Centers for
Disease Control and Prevention (CDC) in the United States (Hafner et al., 2017). It is unfortunate that such an important aspect of life is being neglected by so many individuals. The consequences of this neglect are severe, as insufficient sleep duration has been linked with seven of the fifteen leading causes of death in the United States, including cardiovascular disease, malignant neoplasm, cerebrovascular disease, accidents, diabetes, septicemia, and hypertension (Hafner et al., 2017). It may be shocking to see how impactful a good night’s sleep is to overall health. It should be no surprise then that there is a very distinct association between sleep and the immune system. What may be a surprise, however, is how it does not require many nights of short sleep to strip the body of its resilience and natural defenses, rendering it immunologically weak (Walker, 2018). This weakening of the immune system leaves the body susceptible to a host of diseases, health conditions, and impaired functioning. It was studied that individuals, who sleep less than seven or eight hours a night, have an increased probability of not only gaining weight or becoming obese but also of developing type 2 diabetes (Walker, 2018).

Another function that is impaired by short sleep is the body’s ability to regulate blood sugar. In an experiment conducted by scientists, they studied healthy adults with no existing signs of diabetes or difficulty with controlling blood sugar. The people within this study were limited to sleeping a mere four hours a night for just six nights and the results at the end of the week were astonishing. These formerly healthy individuals were 40 percent less effective at absorbing a standard dose of glucose when compared to their fully rested selves (Walker, 2018).

Sleep and its associated benefits have been previously ignored numerous times due to its passive state of inactivity. However, it has been revealed that, “Over the past few decades sleep’s elaborately orchestrated processes have begun to be revealed as a period of abundant brain activity that is essential to neurologic and general health” (Schneider, 2020, p. 848). Our
health is dependent upon the amount of sleep we receive each night. Sleep serves as essentially a reset button in our daily lives and allows us to start each day fresh with a sharp mind. Receiving adequate sleep each night is crucial to the daily functioning of human beings and a lack of sleep severely impacts people in a multitude of ways. Insufficient sleep severely affects activities of daily living for people and the ways in which they carry out everyday tasks. A study performed by the U.S. National Sleep Foundation reported that 31% of Americans in 2001 slept 6 hours or less daily and that people today sleep 1.5 fewer hours than people who lived in the past century (Yazdanpanah et al., 2020). This decrease in sleep has only been increasing over the years and the question is: when will this trend stop? Will humans continue to sacrifice sleep in order to complete other tasks? Humans require sufficient sleep in order to function properly and maintain normal bodily functions. It is no surprise that inadequate sleep is detrimental to our daily functioning, but what may be a surprise is the host of problems it can cause within the human body.

A study performed by researchers at the University of Chicago studied a group of about five hundred midlife adults, who were all healthy and displayed no signs of heart disease or atherosclerosis (Walker, 2018). For years, they observed the health of the coronary arteries of these individuals, while simultaneously assessing their sleep and the results were striking. The individuals who obtained the equivalent of five to six hours each night or less were 200 to 300 percent more likely to suffer calcification of their coronary arteries over the next five years, in relation to those who slept seven to eight hours (Walker, 2018). This is a tremendous discovery because, in just five years, insufficient sleep was able to cause that much damage to the physiology of human beings and completely wreak havoc on normal bodily functioning. Furthermore, the study uncovered that those who suffered from insufficient sleep were more
likely to have a complete closure of their arteries, subsequently depriving the heart of its blood supply and significantly increasing the risk of a coronary heart attack (Walker, 2018).

The Financial Burden on the Economy from Inadequate Sleep

The effects of insufficient sleep have slowly but surely infiltrated the workplace leading to a severe financial impact on the economy as evidenced by decreased work productivity. It has been studied that insufficient sleep can lead to various malaises, such as heart attack, coronary heart disease, stroke, asthma, chronic obstructive pulmonary disease (COPD), diabetes, and depression (Mohit, 2018). This list of malaises only captures a small portion of the detrimental effects of inadequate sleep and its spiral of effects on the physiology of human beings. It is common for medicine and population health to utilize disease studies, economic analyses, and cost-effectiveness analyses to inform health policy making and resource allocation (Mohit, 2018). This allows for a more accurate understanding of the financial and economic effects of the disease that were previously stated above. It has been reported that the diseases previously mentioned have been associated with not only annual life year losses which are globally reported in the millions, but also healthcare costs which are reported in the trillions of US Dollars (Mohit, 2018). The economy is suffering from lack of sleep just as much as the health of the people. The question is: are the costs of inadequate sleep to our economy sufficient to justify current or increased levels of expenditure on the issue? (Hillman, 2018).

While the human costs of insufficient sleep may be appreciated, ultimately political and administrative decisions are based on economic data (Gupta, et al., 2012). Even though the studies are clear about how harmful inadequate sleep is to the overall health of humans, these matters are trivial when it comes to making executive decisions regarding the economy. With
increasing competition for funds, the importance of studying how inadequate sleep ranks against other health and social problems regarding financial cost is crucial. Although acquiring and maintaining health is paramount, its value is completely diminished in the eyes of investors and economists when compared to obtaining finances. Ignorance about the importance of sleep should no longer continue. Businesses are failing to realize that this severe deprivation of sleep is actually costing them billions of dollars. Insufficient sleep reduces the size of the workplace by placing people at a higher risk for mortality than if they had slept for seven to nine hours a night. Businesses strive for their workers to achieve the maximum amount of hours in order to increase gains and productivity, however, they are failing to realize that they are actually doing the exact opposite. Workers who are sleep deprived are more likely to be absent from work due to sickness or display reduced performance while at work, subsequently leading to a loss of efficiency for each labor unit supplied in the economy (Hafner et al., 2017).

The healthcare system has been increasingly utilized and a burden has been placed on it due to daytime sleepiness, inadequate sleep time, insomnia, and other sleep disorders (Altevogt & Colten, 2006). The impact of inadequate sleep on healthcare is owed to the increase in numbers of people who have been seeking out help related to the inability to sleep, due to related sleep disorders. Each year the United States spends billions of dollars on the direct costs of sleep loss and sleep disorders from doctor visits, hospital services, prescriptions, and over-the-counter medications (Altevogt & Colten, 2006). It is clear that there is now not only an indirect impact on the economy from the spiraling effects of inadequate sleep but also a direct impact in terms of healthcare costs. In terms of direct and indirect costs, an analysis demonstrated that poor sleep health among shift-workers bears an estimated economic impact of between $30 and 40 billion U.S. annually (Barnes & Watson, 2019). It is unbelievable to think that such tremendous costs
have gone unnoticed for so long. The effects of inadequate sleep have a myriad of effects in terms of costs on the economy relating to poor health and studies report that, “Absenteeism for medical conditions associated with inadequate sleep was estimated to be 11.5 days of sick leave per year, compared with 6 sick days per year for those without a chronic disease” (Hillman, 2018). With the rapidly growing numbers of people sleeping less and less, these costs will continue to rise as well as its associated financial burden on the economy.

Another impact that sleep has on the economy is related to work productivity losses and work absenteeism, due to the rise in numbers of people calling out of work sick related to the consequences of insufficient sleep. Absenteeism, or workplace absence due to illness, and presenteeism, or sub-optimal work performance due to working while ill, are both majorly associated with insufficient sleep due to the reduction in workplace efficiency (Barnes & Watson, 2019). A loss of approximately six working days due to absenteeism and presenteeism was attributed to workers who sleep less than 6 hours per night when compared to those who sleep between seven to nine hours per day (Hafner et al., 2017). Due to the spiraling effects of inadequate sleep, it is becoming increasingly more common for people to call out of work, leading to major work productivity losses related to absenteeism. “It has been estimated that fatigue associated with inadequate sleep costs businesses $150 billion a year in absenteeism, workplace accidents, and other lost productivity” (Altevogt & Colten, 2006, p. 158). These losses add up quickly and it is easy to see how there is a severe financial impact on the economy especially with the increasing prevalence of insufficient sleep. It has been proven that, “Well-rested employees miss less work, do a better job when present, have fewer workplace accidents, make better decisions, and interact more positively and interpersonally” (Barnes & Watson, 2019, p. 112). Successful employees are the basis for a successful corporation and a bustling
economy. However, the employees can only be as successful as the amount of sleep they receive each night. Sleep is the major determinant behind the success of the employees and their success all starts with a good night’s sleep. The potential adverse effects of inadequate sleep on health, well-being, and productivity, and the consequences of sleep deprivation have a far-reaching and expensive impact on the economy (Grewal, 2017). By simply making small changes to sleep duration, such as if people who slept less than six hours started sleeping six to seven hours, can have an enormous impact by adding $226.4 billion to the US economy (Grewal, 2017).

Not only is insufficient sleep leading to losses in working hours and absenteeism, but also major losses in work productivity. A study estimated that the annual costs from productivity losses for the entire employee population is $4.7 billion and when these productivity loss/cost calculations are extended to the total employee population at all four companies, it is estimated that work productivity loss due to insomnia, insufficient sleep, and sleep disturbances reach a cost of $54 million annually (Rosekind et al., 2010). The costs of insufficient sleep are expensive and extend beyond the individual suffering from this loss. The loss of sleep only leads to a domino effect of further losses that ultimately result in a major financial burden. It was estimated that the loss in productivity was on average 2.4% in workers sleeping less than 6 hours per day compared to those sleeping between seven to nine hours, and even workers who sleep on average between six to seven hours per day still experience a loss of 3.7 workdays and an overall 1.5% productivity loss (Hafner et al., 2017). Receiving adequate sleep each night is an issue that can no longer go unnoticed. It must be addressed because the economy is suffering along with the health of the people. A striking statement reported, “All told, from a macro-economic perspective, the U.S. economy loses the equivalent of 1.23 million working days due to insufficient sleep annually, corresponding to roughly 9.9 million working hours” (Barnes &
These losses are significant and it is unfortunate that the costs of such significant losses are only coming to the forefront now.

Another interesting topic of discussion is how inadequate sleep predisposes people to be more inclined to financial risk-taking behaviors. Individuals with poor sleep and increased sleep disturbances have been proven to be more inclined to take greater risks with their finances due to distorting the probability of their investments, leading to serious repercussions (Nofsinger & Shank, 2019). Poor sleep impairs our thinking and clouds our judgment leaving a large margin for error. “The relationship between poor sleep and the present bias could lead to improperly selecting investment opportunities that are less profitable” (Nofsinger & Shank, 2019, p. 101). In doing this, major losses are endured and with repeated occurrence, there is a financial burden being placed on the economy. The results of an analysis that was performed to highlight the relationship between poor sleep and finances clearly displayed the cruciality of sleep in terms of financial decision making. Poor sleep quality and more sleep disturbances were associated with increased risk taking, whereas “Individuals who have better sleep, better sleep quality, and fewer sleep disturbances distort the probability of gains and losses less, which allows them to make better financial decisions” (Nofsinger & Shank, 2019, p. 100). Overall, poor sleep was associated with irrational financial decisions and being unaware of the risks associated with these decisions. Sleep has economic consequences and its cruciality is finally coming to the forefront.

The consequences of inadequate sleep are multifaceted and this problem is becoming increasingly more prevalent in today’s society. Furthermore, if this problem is not addressed soon, it will spiral completely out of control and continue to impact our society in more ways than ever imagined. What humans do not realize is this decline in sleep is spiraling out of control and affecting all people in a myriad of ways. The effects of insufficient sleep are no
longer exclusive to the person who is missing out on sleep but are now having a domino effect on others. This domino effect is not only evident within the healthcare setting as increased illness and within the workplace as decreased productivity, but also within the economy as major financial losses.

Adequate sleep can be achieved by ensuring that a schedule is followed each night and that sleep disturbances are prevented and eliminated. Studies have shown that, “The optimal sleep duration with the lowest risk of sickness absence was 7.6 hours for women and 7.8 hours for men” (Lallukka et al., 2014, p. 1413). Ensuring adequate sleep each night can begin a shift within the population toward better health. Additionally, adequate sleep will promote increased work productivity and overall reduce the financial effects on the economy. The vital role of sleep in employee health should no longer be overlooked, as it has been stated that healthy employee sleep and corporate success are directly correlated (Barnes & Watson, 2019). There are many remedies that can be implemented into the lives of employees to promote sleep. Some remedies include allowing for “unwinding” time between work and home, more flexible work schedules, and receiving education about good sleep habits (Rosekind, et al., 2010). Inadequate sleep should no longer be ignored, but rather should be the focus of corporations in order to maximize expenditure and alleviate the weight of the burden placed on the economy from inadequate sleep.

**Findings and Discussion**

It can be observed that sleep is necessary for the daily functioning of individuals and has proven itself to play an essential role in regulating many daily activities. Without this daily regulation, a multitude of consequences may result leading to a severe impact on the health of individuals as well as a financial burden on the economy.
The effects of inadequate sleep on the human body have proven to be a reason in itself to get sufficient sleep each night. Seven out of the fifteen leading causes of death in the United States can be linked to insufficient sleep. It is unfortunate that the failure of science to explain the reasons why people need sleep has led to the ignorance surrounding sleep and its detrimental consequences. Inadequate sleep severely impairs the functioning of the human body from a microcellular level and the damage continues to wreak havoc before reaching the surface. By the time the effects are evident, the damage has already worked its way through the entire body. Inadequate sleep has been proven to play a pivotal role in the development of a multitude of malaises and one study showed that shorter sleep duration is not only associated with a greater prevalence of myocardial infarctions but also coronary heart disease and hypertension (Yazdanpanah et al., 2020). The harmful effects of inadequate sleep on the human body have been studied numerous times. From heart attacks to strokes to diabetes, the risks for all these maladies are enhanced by insufficient sleep. However, what tends to be neglected is how this increasing lack of sleep among workers is actually leading to major financial losses in the economy. The increasing prevalence of inadequate sleep is both unfortunate but also fortunate because people are now being made aware of its consequences and beginning to make a change. By getting a sufficient amount of sleep each night, people can work toward repairing the damage and reducing their risk for a host of malaises.

It has been proven that the effects of inadequate sleep not only have an indirect impact on the economy, but also a direct impact. There are major losses associated with inadequate sleep from healthcare costs, work absenteeism and presenteeism, and an overall loss in work productivity. The prevalence of inadequate sleep is rising, resulting in surges in the costs on the economy. If the trend does not stop, the economy will continue to lose billions of dollars...
annually. Sleep, which seems like such an irrelevant aspect of our lives when discussing finances, is actually a major determinant in the success of the economy. With demanding work hours, it is difficult for workers to find the time to sleep, but with such severe consequences, it is obvious that sleep should be paramount.

It is understood that sleep requires time and that both sleep and time are limited resources in today’s fast-paced society. It has been said that, “Sleep is an integral component of human functioning and economic activities and its loss may be associated with the loss of longevity, vitality, and prosperity. On the other hand, achieving adequate sleep requires the expenditure of another limited resource: Time” (Mohit, 2018, p. 2). The struggle between sleep and time can be compared to a pendulum that is constantly oscillating back and forth in search of achieving equilibrium. Indeed, sleep requires time, but after hearing about the various malaises that inadequate sleep can cause, it seems foolish not to make sleep a priority. After all, sufficient sleep forms the basis of daily functioning and serves as a launching pad for human success. It allows humans to regulate their emotions and take a more analytical approach toward decision-making. As humans, achieving prosperity requires a multifaceted approach, but without a strong foundation to work on, none of this can be possible. Humans require adequate sleep each night to be able to function at their baseline at the very least. Choosing one limited resource in favor of the other has provided a mere glimpse of the consequences that humans may face, but with continued studies, there is hope that humans will be able to find the balance between feeling better rested and more productive (Mohit, 2018). When this balance is achieved, the possibilities are endless.
Conclusion

The effects of inadequate sleep are hitting the economy hard from multiple different angles. From increased costs to healthcare to increased work absenteeism and overall decreased work productivity, the value of sleep is proving itself to be essential. The consequences of inadequate sleep are expensive. Whether it is the detrimental effects on the human body or the severe financial burden on the economy, there is a huge price to pay. For a passive state of nature, sleep undoubtedly plays an active role in the lives of every person. Sleep has proven itself to be a major determinant behind the health of individuals and the wealth of the economy. The consequences of inadequate sleep are severe and are not exclusive to the person suffering from inadequate sleep. The loss of sleep and its associated consequences should no longer be undermined as they are slowly beginning to spiral out of control. Its effects are spreading like a disease and infiltrating many different areas of life. Humans can stop this spread by learning the importance of receiving adequate sleep each night. Not only would this alleviate a major burden on the economy, but would also increase the longevity and vitality of many lives. The effects have infiltrated the workplace and without proper adjustment will continue to spread and increase the finances of the economy. As a result, the consequences of inadequate sleep will transcend the detrimental physiological effects on the individual and ultimately result in a severe financial burden on the economy. Sleep forms the foundation for human health and allows the body to repair itself each night. It is crucial to overall well-being and should be a priority in the lives of every individual. Without sleep, humans deteriorate quickly and are at risk for a host of problems, but with sleep, humans are unstoppable. By continuing to raise awareness about the importance of sleep and encouraging individuals to implement more hours of sleep each night, there is hope for the future health of the people as well as the finances of the economy.
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